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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
YABUT, DANIEL D	

ART UNIT	PAPER NUMBER
3656	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,488	KIENER ET AL.	
	Examiner	Art Unit	
	DANIEL YABUT	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *1-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/9/2006 and 4/22/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, at least one of the radially outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees with respect to their radial lines, as recited in claim 24, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 15, 31 and 37** rejected under 35 U.S.C. 102(b) as being anticipated by EP 0557603 A1.

EP 0557603 A1 discloses a viscous torsional vibration damper, having two faces (Fig. 1), comprising the following:

Re claim 15

- An annular damper housing (1), which can be non-rotatably connected with a machine shaft (at 11)
- Said damper housing surrounding a working chamber (7) for receiving a flywheel (near 7)
- Said working chamber being filled with a viscous damping medium (line 2 of abstract) wherein at least one of the two faces of the torsional vibration damper carries a fan plate (15) with radially inner and radially outer cooling channels (between ribs near 17, upper and lower regions), the cooling channels being arranged on at least two concentric graduated circles of the fan plate (Fig. 2)

Re claim 31

- An annular damper housing (1), which surrounds a working chamber (7) and to be filled with a viscous damping medium (line 2 of abstract)
- A fan plate (15) formed on at least one of two faces of the viscous torsional vibration damper (at 17), the fan plate having radially inner and radially outer cooling channels (between ribs near 17, upper and lower regions), arranged thereon in at least two concentric graduated circles (Fig. 2)
- Radially inner cooling channels have different geometrical dimensions than the radially outer cooling channels (see widths of channels of upper region compared to channels of lower region).

Re claim 37

- A heat transfer apparatus for use with a viscous torsional vibration damper (Fig. 1)
- A fan plate (15) operatively configured to be arranged on at least one of two face surfaces (at 17) of the torsional vibration damper when in use
- The fan plate includes radially inner and radially outer arranged cooling channels (between ribs near 17, upper and lower regions), the radially inner and radially outer ribs arranged cooling channels forming two concentric graduated circles on the fan plate (Fig. 2)
- Radially inner cooling channels have different geometrical dimensions than the radially outer cooling channels (see widths of channels of upper region compared to channels of lower region).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 15-42**,are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent, EP 0557603 A1, in view of Buyze, US Patent 3,730,304, and in further view of Shimazu et al., US Patent 5,526,905.

EP 0557603 A1 discloses a viscous torsional vibration damper, having two faces (Fig. 1), comprising the following:

Re claim 15

- An annular damper housing (1), which can be non-rotatably connected with a machine shaft (at 11)
- Said damper housing surrounding a working chamber (7) for receiving a flywheel (near 7)
- Said working chamber being filled with a viscous damping medium (line 2 of abstract) wherein at least one of the two faces of the torsional vibration damper carries a fan plate (15) with radially inner and radially outer cooling ribs (17), the cooling ribs being arranged on at least two concentric graduated circles of the fan plate (Fig. 2)

Re claim 20

- An angular distance a between adjacent radially outer cooling ribs (near 17; Fig. 2, upper region) is smaller than an angular distance of the radially inner cooling ribs (near 17; Fig. 2, lower region).

Re claim 25

- The cooling ribs are situated on different radial lines R (see 17 at upper and lower regions in Fig. 2)

Re claim 26

- The radially inner cooling ribs are radially spaced with respect to the radially outer cooling ribs (see 17 at upper and lower regions in Fig. 2).

Re claim 27

- The radially inner cooling ribs are radially spaced with respect to the radially outer cooling ribs (see 17 at upper and lower regions in Fig. 2).

Re claim 31

- An annular damper housing (1), which surrounds a working chamber (7) and to be filled with a viscous damping medium (line 2 of abstract)
- A fan plate (15) formed on at least one of two faces of the viscous torsional vibration damper (at 17), the fan plate having radially inner and radially outer cooling ribs (17) arranged thereon in at least two concentric graduated circles

Re claim 36

- An angular distance between adjacent radially outer cooling ribs (near 17; Fig. 2, upper region) being smaller than an angular distance of the radially inner cooling ribs (near 17; Fig. 2, lower region).

Re claim 37

- A heat transfer apparatus for use with a viscous torsional vibration damper (Fig. 1)
- A fan plate (15) operatively configured to be arranged on at least one of two face surfaces (at 17) of the torsional vibration damper when in use
- The fan plate includes radially inner and radially outer arranged cooling ribs (17), the radially inner and radially outer arranged cooling ribs forming two concentric graduated circles on the fan plate (Fig. 2)

Re claim 42

- An angular distance between adjacent radially outer cooling ribs (near 17; Fig. 2, upper region) is smaller than an angular distance of the radially inner cooling ribs (near 17; Fig. 2, lower region).

However, as to **claims 15**, **18-23, 25-31**, **34-37**, and **40-42**, while EP0557603A1 discloses the fan plate having cooling ribs, it does **not** expressly disclose the fan plate having cooling channels.

Buyze teaches the use of cooling channels (24b) for the purpose of providing a reducing weight and reducing manufacturing costs (C1 / L19-20; C2 / L25-27).

Regarding **claims 15-16**, **18-32**, **34-38**, and **40-42**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide cooling channels, as taught by Buyze, in the device of EP0557603A for the purpose of providing a reducing weight and reducing manufacturing costs.

As to **claims 15**, **31**, **and 37**, EP0557603A1 does **not** expressly disclose the radially inner cooling channels having different geometrical dimensions than the radially outer cooling channels.

Shimizu et al. teaches the use of radially inner cooling channels (21; Fig. 5) having different geometrical dimensions than radially outer cooling channels (22; Fig. 5) for the purpose of creating a pressure drop that in turn induces air flow through the spaces (C11 / L16-21), thus improving the efficiency of the device.

Regarding **claims 15**, **31**, **and 37**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the radially inner cooling channels having different geometrical dimensions than the radially outer cooling channels, as taught further by Shimizu et al., in the device of EP0557603A as modified above for the purpose of creating a pressure drop that in turn induces air flow through the spaces, thus improving the efficiency of the device.

As to **claims 16, 32 and 38**, EP0557603A1 does **not** expressly disclose the ratio between a radial length and a width of the radially outer cooling a channels is greater than a ratio of the radially inner cooling channels.

Shimizu et al. teaches a ratio between a radial length (C15 / L5-6) and a width (C9 / L26) of the radially outer cooling channels (21) is greater than a ratio of the radially

inner cooling channels (22) for the purpose of smoothly transforming a stream in the axial direction of the device into a radial stream.

Regarding **claims 16, 32 and 38**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the ratio between a radial length and a width of the radially outer cooling a channels being greater than a ratio of the radially inner cooling channels, as taught by Shimizu et al., in the device of EP0557603A as modified above for the purpose of smoothly transforming a stream in the axial direction of the device into a radial stream, thus promoting the efficiency of the device.

As to **claims 17, 21-23, 28, 33 and 39**, EP0557603A1 does **not** expressly disclose the ratios being between 3.5 and 1, as recited in claims 17, 33 and 39, the angular distance between adjacent radially outer cooling channels being between 3 and 7 degrees, as recited in claim 21, the angular distance between adjacent radially inner cooling channels being between 5 and 15 degrees, as recited in claims 22 and 23, and the radial spacing of the cooling channels amounts to between 20% and 100%of the length of the cooling channels, as recited in claim 28.

Regarding **claims 17, 21-23, 28, 33 and 39**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide the ratios being between 3.5 and 1, as recited in claims 17, 33 and 39, the angular distance between adjacent radially outer cooling channels being between 3 and 7 degree, as recited in claim 21, the angular distance between adjacent radially inner cooling channels being between 5 and 15 degrees, as recited in claims 22 and 23, and the radial spacing of the

cooling channels amounts to between 20% and 100% of the length of the cooling channels, as recited by claim 28, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05.)*

As to **claims 18, 34 and 40**, EP0557603A1 does **not** expressly disclose the cross-sectional surface of the radially outer cooling channels being smaller than the cross-sectional surface of the radially inner cooling channels.

Shimizu et al., teaches the use of a cross-sectional surface (at 122N; Fig. 32) of the radially outer cooling channels (122) being smaller than a cross-sectional surface (121R) of the radially inner cooling channels (121) for the purpose of adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels (C21 / L9-13).

Regarding **claims 18, 34 and 40**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the cross-sectional surface of the radially outer cooling channels being smaller than the cross-sectional surface of the radially inner cooling channels, as taught by Shimizu et al., in the device of EP0557603A1 as modified for the purpose adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels, thus promoting the efficiency of the device.

As to **claims 19, 35 and 41,** EP0557603A1 does **not** expressly disclose the radially inner cooling channels being wider than the radially outer cooling channels.

Shimizu et al. teaches the use of radially inner cooling channels (121) being wider (at 121R) than radially outer cooling channels (at 122N) for the purpose of adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels (C21 / L9-13).

Regarding **claims 19, 35 and 41**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the radially inner cooling channels being wider than the radially outer cooling channels, as taught by Shimizu et al., in the device of EP0557603A1 as modified above for the purpose of adequately allowing cooling air to flow through the spaces formed by the radially outer cooling channels, thus improving the cooling efficiency of the device.

As to **claim 24**, EP0557603A1 does **not** expressly disclose at least one of the radially outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees with respect to their radial lines.

Shimazu et al. teaches the use of radially outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees (Fig. 19; C14 / L42-43, L48-50) with respect to their radial lines for the purpose of narrowing the stagnation area to form a wide main stream area (C5 / L30-35), thus improving the cooling efficiency of the device (C15 / L56-62).

Regarding **claim 24**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide at least one of the radially

outer and radially inner cooling channels being oriented at an angle of slope $\beta \leq 30$ degrees with respect to their radial lines, as taught by Shimazu, in the device of EP0557603A1 as modified above for the purpose of narrowing the stagnation area to form a wide main stream area, thus improving the cooling efficiency of the device.

As to **claim 29 and 30**, EP0557603A1 does **not** expressly disclose the cooling channels with open ends on the radial side being formed in an arched manner from a plane of their circular sheet metal blank and the cross-section of the cooling channels being one of rectangular, sinusoidal and circular.

Buyze teaches the use of cooling channels with open ends on the radial side are formed in an arched manner (Fig. 9) from a plane of their circular sheet metal blank (C2 / L26) and the cross-section of the cooling channels being sinusoidal (Fig. 8) for the purpose of providing a simplified rib design resulting in a lighter and less expensive product (C2 / L25-27; C1 / L19-21).

Regarding **claims 29 and 30**, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide the cooling channels with open ends on the radial side being formed in an arched manner from a plane of their circular sheet metal blank and the cross-section of the cooling channels being one of rectangular, sinusoidal and circular, as taught by Buyze, in the device of EP0557603A1 as modified above, for the purpose of providing a simplified rib design resulting in a lighter and less expensive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL YABUT whose telephone number is (571)270-5526. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard W. Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL YABUT/
Examiner, Art Unit 3656
10/28/2008

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656